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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

NEWS LETTER

FOR JULY 1934

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FRUIT INSECTS

Control of pecan nut case bearer under humid and under semiarid conditions.--Under the semiarid conditions existing at Brownwood, Tex., C. B. Nickels has obtained from 75 to 95 percent control of severe infestations of the pecan nut case bearer by the use of two applications of acid lead arsenate, using 3 pounds in 50 gallons of water. Basic lead arsenate was less effective, and magnesium arsenate gave no control. In the more humid Georgia pecan-growing section lead arsenate has in previous years been found not only comparatively ineffective against this case bearer, but injurious to the pecan foliage. Among other materials, nicotine mixtures have been tested by G. F. Moznette, in charge of the Albany, Ga., laboratory. Infestations have been reduced from 97 to 99 percent this season from two applications, made 1 week apart, of nicotine sulphate (40 percent nicotine) at a strength of one part in 1,000 of spray mixture with 0.75 percent summer oil emulsion in one plat and with 0.25 percent fish oil in another. A single application of the oil-nicotine mixture gave a control of 93 percent.

Conference on citrus pest control.--On July 17 a conference was held at Pomona, Calif., for the purpose of working out a schedule of recommendations for citrus pest control in that district for 1934. Participating in this conference were H. J. Quayle and Ralph Smith, of the Citrus Experiment Station, Riverside, Calif., R. S. Woglum, of the California Fruit Growers Exchange, H. J. Ryan, Agricultural Commissioner for Los Angeles County, M. B. Rounds, Farm Adviser for Los Angeles County, F. D. Young, Meteorologist, of the U.S. Weather Bureau, Pomona, Calif., and E. A. McGregor, of the Whittier, Calif., laboratory. Much good came out of this meeting, and a program of control was drawn up that met with the general approval of all participants.

Dispersion of dried fruit beetle.--In June and July D. F. Barnes, of the Fresno, Calif., laboratory, liberated 19,850 stained beetles in the vicinity of traps that were baited with fermenting dried peaches. The stains used were water solutions of eosin, methyl violet, and malachite green. A total of 65 beetles were identified after spraying the catches with solutions of alcohol or sodium hydroxide. The distances from liberation points to recovery points ranged from 200 to 864 feet. The longest interval between liberation and collection was 24 days.

A new use for worn-out motor tubes.--W. P. Yetter, Jr., Cornelia, Ga., reports that worn-out inner tubes, no longer of use on an automobile, can be used to good advantage in the laboratory. In many laboratories the usual 8-inch battery jar is used, with small rubber bands to hold the cheesecloth cover in place over the jar. These small rubber bands break easily, and often the live insects within the jar escape. Cross sections, one-half inch wide, cut from 4.75 by 19 tubes make ideal bands to hold the covers over the battery jars. These bands will outlast the small rubber bands and afford much better protection for the specimens.

MEXICAN FRUIT FLY

No Mexican fruit fly taken on Texas side of Rio Grande.--Neither adults nor larvae of the Mexican fruit fly were taken on the Texas side of the Rio Grande in July. This was the first month to elapse without taking adult Anastrepha ludens Loew since December 1933. This negative showing was made during the operation of the largest number of traps in use at any one time since the inauguration of this project. At the end of the month, 7,050 glass traps were being operated on 541 premises. However, although no A. ludens were taken, the first specimens of the dark fruit fly (A. serpentina Wied.) and the West Indian fruit fly (A. acidusa Walk. (fraterculus auct.)) to be taken in over 3 months were captured in traps, 5 of the former and 1 of the latter being taken during the month. In addition, 23 A. pallens Coq. were trapped.

Fewer fruit flies in Matamoros.--In July only 18 adult fruit flies were trapped in Matamoros, as compared to 36 in June; however, there was a decided increase in the number of larvae recovered from imported fruits. A total of 11,340 larvae of A. ludens, 42 of A. acidusa and 27 of A. serpentina were taken from imported mangoes, oranges, and pears in Matamoros. The large importation of infested fruits should result in an increased catch of adult flies in the traps in Matamoros during August.

PREVENTING SPREAD OF MOTHS

More defoliation by gypsy moth.--Defoliation by the gypsy moth this summer has been more extensive in many sections than has been reported for several years and, in some other sections, greater than ever before. The indications are that the total acreage of woodland showing from slight to complete defoliation will be much greater than during any year since 1929.

Gypsy moth inspection in Pennsylvania.--In addition to performing routine duties, employees in Pennsylvania assisted with the enforcement of the State gypsy moth quarantine. They inspected a total of 43 shipments of forest products, consisting chiefly of 4,494 mine props and lagging and 11 cords of wood. As a result of this inspection, two new gypsy moth egg clusters were found and treated on a mine prop in Bear Creek Township. On August 1 the State of Pennsylvania employed 25 men and assigned them to cutting sprout growth in cut-over areas in Jenkins Township.

Emergency work on gypsy moth.--A recent summation of gypsy moth control, accomplished by Emergency Conservation Work during the fiscal year just ended, shows that work was done by men from 1 camp in Vermont, 10 camps in Massachusetts, and 7 camps in Connecticut. Up to July 1 a total of over 76,000 man-days of labor were used, based on a 6-hour day; 460,000 acres of woodland and open country were scouted; and 170,743 egg clusters were creosoted. For the months of June, July, and August the number of C.C.C. and V.C.C. men allotted to gypsy moth work was reduced to about 120. The principal work of these men has been putting up and patrolling burlap bands at gypsy moth infestations. Early in August they had burlapped 46,782 trees; had crushed at these burlap bands 479,811 gypsy moth caterpillars and 42,365 pupae; and had creosoted 2,300 female moths. They have also creosoted 4,396 new egg clusters since the first of July.

No severe defoliation by satin moth.--No severe defoliation by the satin moth has been reported this year. Although this insect is widely distributed, the fact that it confines its feeding to willows and poplars makes it improbable that there will be extensive areas of defoliation. Reports indicate many of the towns in the infested area in New Hampshire have light infestations but, except at a few points, the infestations have not been sufficiently dense to cause noticeable defoliation. In Massachusetts light infestations were reported from a number of towns, with some defoliation in one of the towns on the coast just north of Boston.

Keeping tabs on tools.--It has always been a problem to keep the special tools, innumerable small parts, and such items as oil measures, funnels, supply cans, axes, saws, shovels, crowbars, spray nozzles, oil coats, oil hats, and other articles with which spraying machines are equipped when they leave for the field, properly sorted and stored, so that an inventory of these items could be made, independently of the general stock of supplies, quickly and accurately at any time. As a solution to this problem, a locker-room, with specially designed compartments or lockers, in which is stored the equipment of each spraying machine, has been in use for several years.

CEREAL AND FORAGE INSECTS

Chinch bugs in Illinois.--C. Benton, Lafayette, Ind., reports that migration of bugs from hibernation began about May 1 and was about over by May 6. The field counts showed that the migrating bugs selected winter wheat, rye, barley, spring wheat, and oats, in the order named. Infestations in wheat, rye, and barley were very heavy, but the numbers of bugs in oats remained very low until wheat, rye, and barley began to die as a result of drought combined with the feeding of chinch bugs the middle of May. At that time considerable migration of old adults to oats and corn began, as the wheat, rye, and barley died or was plowed up. Oats and corn adjacent to such fields received infestations of old bugs late in May and early in June. In some instances these crops suffered considerable injury from the old bugs, although the more severe and extensive damage was to wheat, rye, and barley. In oats the bugs showed a tendency to concentrate in the greener, more succulent areas. Mortality of the old bugs increased rapidly early in June, however, and by the middle of June they ceased to be an important factor. Under the conditions prevailing this year at least, the control of chinch bugs by trapping them in barley plantings is apparently out of the question. They were fully as abundant in wheat and rye as in barley, and when these grains became unsuitable to them they flew into oats and corn. In another year conditions may be entirely different.

Breeding corn to find double cross hybrids resistant to corn borer.--L. H. Patch, of the Toledo, Ohio, laboratory, spent 2 weeks during the corn-pollination season at Bloomington, Ill., working at the experimental plots of J. R. Holbert, of the Bureau of Plant Industry. The purpose of the future breeding program in this project is to find another single cross of corn with the specific tassel characteristic (that prevents the entrance of young European corn borers into the tassel buds) and another later single cross which, when crossed with single cross Hy x R4, will give two double crosses with the tassel characteristic for use in the northern and southern sections of the Corn Belt, respectively. With this in mind, 21 new single crosses have been made for observation next year under corn borer conditions at Toledo. The 7 inbreds (exclusive of R4 and Hy), 4 of which are comparatively new, were found to possess the desirable tassel characteristic, but none to such an extent as inbred R4.

New type sled-harvester useful in corn borer control.--C. H. Batchelder and D. D. Questel, Arlington, Mass., report that experimental work in collaboration with the Bureau of Agricultural Engineering, with a new type of sled-harvester, indicates that a very practical implement will be added to the mechanical devices now available to growers in areas where summer clean-up measures are desirable. The new sled-harvester is designed for use in fields of early varieties which are heavily infested and which may be cut for ensilage prior to moth emergence. The machine is also adapted for harvesting small corn that cannot be cut effectively with a larger implement.

Aphids as vectors of mosaic disease.--J. W. Ingram, Houma, La., states that decreases in numbers of *Aphis maidis* Fitch and *A. bituberculata* Wilson indicate that heaviest mosaic transmission probably occurs in February and March, when these vectors are most numerous. Results of examinations for these aphids indicate the possibility of producing seed cane with little mosaic in certain lightly infested areas and by spring planting.

Glassy cutworms in Oregon.--L. P. Rockwood, Forest Grove, Oreg., reports: "Bait traps for moths were first put out on July 19 in old locations near Cornelius and Forest Grove. Up to July 31, we had already taken 127 individuals of the glassy cutworm. The highest number taken in any previous season, including August, was 92 in 1930."

Southwestern armyworm at Forest Grove, Oreg.--Mr. Rockwood also says, "Moths of *Prodenia praefica* Grote were taken at a light at Forest Grove in July. This is the first time we have taken this species so far northwest of the Cascade Mountains. Heretofore, our most northerly record on the west side of the Cascades was from Benton County in 1932."

The wheat midge in Washington.--Max M. Reeher, Forest Grove, reports that the biennial survey of the wheat midge in western Washington was made the latter part of July. One wheat midge larva was found in a field of spring wheat at Falls City, the most southern point of infestation recorded in the 1930 survey. None was found there in 1932, owing to the absence of wheat fields in that section in that year. No wheat midge was found in the scattering wheat fields south of Falls City to Chehalis, Wash., where wheat is more generally grown.

Wheat joint worm infestation in Oregon lowest in 9 years.--T. R. Chamberlin, Forest Grove, reports that stubble counts in the Molalla, Oreg., district have shown the lowest infestation since the insect was discovered there in 1926. Infestation in 10 fields ranged from nothing to 6.5 percent, averaging 3 percent. Infestation in the sample field was 1.5 percent. A comparison between the infestations in the sample and nearby fields for the last several years is as follows:

Year	Field infested				
	Sample	Nearby	Nearby	Nearby	More remote
	Percent	Percent	Percent	Percent	Percent
1930------	91.2	72.0	69.4	38.3	--
1931------	69.9	67.5	79.7	13.3	--
1932------	47.5	51.6	30.9	--	--
1933------	19.3	8.4	3.0	--	70.5
1934------	1.5	6.5	0	--	6.5

The conditions that brought about the greatly reduced infestation in 1934 began in the winter of 1932-33 when most of the winter wheat was killed out, together with clover in the wheat stubble of the previous season. Stubble in which the clover was killed was plowed under early in the spring and, to compensate for the loss of the winter wheat, much spring wheat was sown and in many fields this was too late to become infested. In the spring of 1934, therefore, most of the stubble unburied at the time of the issuance of the joint worm adults was uninfested, or but slightly infested, and the remaining fields of winter wheat stubble were widely scattered and had infestations below normal. The scattering over a wide area of the few adults issuing from the few fields of lightly infested stubble resulted in an infestation in 1934 still lower than that of 1933. We believe that we have here a practical large-scale demonstration of the control of the wheat joint worm by plowing under the stubble. It seems probable that it will be several years before the joint worm can reach its former abundance, even under very favorable circumstances. A survey of western Washington as far north as Falls City showed no infestation in that territory.

Parasitization of western spotted cucumber beetle.--Chamberlin also reports that dissection of two lots of beetles in July showed 8.7 and 5.4 percent parasitization by *Celatoria diabroticae* Shimer. Of 36 females dissected, 1 showed ovaries full of small eggs on July 21. This is our earliest record for the appearance of eggs which, with few exceptions, have not appeared until the February following the summer of issuance. Newly issued adults of *Diabrotica soror* Lec. were found as late as July 27 at Chehalis, Wash. As reported previously, emergence of this species began as early as

June 2 at Carlton, Oreg.

Status of alfalfa weevil.--Geo. I. Reeves, Salt Lake City, Utah, reports: "Since June 25 the numbers of eggs and larvae of the alfalfa weevil have dropped to nothing at Fallon, Nev., Salina, Utah, and Medford, Oreg., and oviposition is being resumed at the last-named place. Eggs are still being deposited in small numbers (0.88 per square foot) in dry stems at Salt Lake. The number of new adults is high (5.9 per square foot) at Salina, with 2.25 cocoons per square foot still present, and the number of the parasite *Bathyplectes curculionis* Thoms. is nearly 10 per square foot, of which 32 percent promise to be effective. Elsewhere, the number of new adult weevils is relatively low, ranging from 3.38 at Medford to 0.13 at Fallon. The decrease since last month is due partly to migration from the hot fields, but largely also to death from heat. *Bathyplectes* cocoons have been recovered at Medford, as a result of the colonization made there last spring."

Pea aphid outbreak in Georgia.--Geo. W. Barber, Savannah, Ga., reports that on May 11, 1934, a serious outbreak of *Illinoia pisi* Kalt. was observed on Australian peas in Sandersville, Ga. When first observed, a field of 15 acres had been nearly destroyed and the aphids were spreading to vetch in adjoining fields, where severe injury was also being done. Field counts were made to determine the aphid population. The greatest number of aphids counted per leaf was 132, and the lowest, 9. The spring season had been unusually wet, which was favorable to the rapid development of the aphids. Such conditions were also favorable to development of the fungus *Empusa aphidis* Hoffman. At the time of examination 25.7 percent of the aphids had been destroyed by this fungus. The fungus spread rapidly in the field and, assisted by other enemies, stamped out the aphid infestation on vetch after the peas had been plowed under. Within 2 weeks no aphids could be found in the vicinity. On May 11, incredible numbers of adults of *Syrphus americanus* Wied. occurred in this pea field and larvae of this fly were present at the rate of 34 per 100 leaves, or an estimated total of 322,274,304 in the field. At least as many larvae of the convergent ladybeetle also were present.

Bran-poison-water versus bran-poison-oil in grasshopper bait.--C. C. Cartwright, Sacramento, Calif., reports that associated field tests on the value of lubricating oil in baits for grasshopper control, under California conditions, have been made. Over 90 percent of the hoppers were in the adult stage. The following formulas were used:

No. 1	No. 2
Bran, 100 pounds	Bran, 100 pounds
White arsenic, 5 pounds	White arsenic, 5 pounds
Water, 14 gallons	Western oil, 1-1/2 gallons

Ten cages of hoppers were swept from each plot, and counts of the dead in each cage were made on the 3 days following the sweeping. The bran-poison-water bait was significantly more efficient than the bran-poison-oil bait.

JAPANESE AND ASIATIC BEETLES

Cotton as a food plant of the Jap beetle.--I. M. Hawley and T. N. Dobbins, Moorestown, N. J., report that cotton plants grown in pots in the greenhouse were placed in two large field cages early in July and Japanese beetles were restricted to the cotton as food. In check cages smartweed was supplied as food. In the first test, at the end of 5 days, 30 of 200 beetles were alive in the check cage, and only 2 and 4 in the cages with cotton. In a second test, 19 of 200 beetles were alive at the end of 11 days in the check cage and 7 and 15 in the cotton cages. In both tests beetles fed readily on the cotton. Results to date indicate that in the absence of more preferred food plants cotton will be readily eaten, even early in the feeding period.

Jap beetles killed by feeding on buckeye blossoms.--Messrs. Hawley and Dobbins also report: "A buckeye tree at Mullica Hill, N.J., has also been under observation this year. It is larger than the tree at Lambertville and beetles are more abundant in that locality. Counts of dead beetles under this tree averaged over 100 per square foot. Beetles were caged on blossoms from this tree and kept in W. E. Fleming's testing cellar, where a high temperature and a high humidity are maintained. In the first test, 157 were dead and 45 alive at the end of 36 hours. Beetles were caged on smartweed as a check, and when examined 40 were dead and 162 were alive. In a second test with material from the same source and run for the same length of time, 153 were dead and 51 alive, whereas in the smartweed check, 8 were dead and 190 alive. Buckeye flowers evidently contain some material that is toxic to the beetle. Beetles eat into the sides of the small flowers on the main spike and apparently must feed for some time before they ingest enough of the poison to cause paralysis."

Trapping of Jap beetles.--"Data have been obtained on the 33 original tests set up at Woodstown, N.J.," reports F. W. Metzger, Moorestown, "and several additional experiments have been inaugurated. Millions of beetles have been captured in the traps during the month. * * * It has been shown definitely that certain of the cheaper grades of geraniol are as attractive to the beetle as are the more expensive lots. The cheaper grades have been analyzed at the Moorestown, N.J., laboratory and it is believed that definite specifications for a much cheaper material will be available for next season. Emergence of the beetle at Whitesbog, N.J., was considerably later than in the southern part of the State, as beetles were not captured in numbers until July 17. One field, as in 1933, is more heavily infested than the others, little injury being apparent elsewhere. Up to July 15 more beetles were being captured in the traps than could be found on the foliage. For the past three seasons the experimental traps at Woodstown have apparently protected a large field of asparagus from beetle injury. On July 24, 48 traps were placed 10 feet apart along one side of an asparagus field near Cohansey, N.J., where beetles had seriously injured an adjoining block of plants. The results to date indicate that infestation is much lighter in the part of the field where the traps are located than where there are no traps. In 1933, after having entirely defoliated favored food plants, the beetles fed on evergreens in nurseries at Shiloh, N.J. It was believed that traps might be of value under such conditions, as they would afford an added attraction for the beetle. Accordingly, 100 traps were placed in operation on July 10. As all available men were engaged on other work, the project was made a cooperative one, the nursery collecting the beetles. To date no feeding on the evergreens has been observed."

Jap beetle repellents.--Mr. Metzger also reports: "Definite results have been obtained from tests of repellents at a rose garden at Roadstown, N.J. Of all the substances tested, o-chlorophenol is most outstanding in repellent action. As many thousands of rose plants are in the vicinity of the dispensers, the conditions for the tests were especially severe and further work will be necessary before definite recommendations can be made. The work at another nursery was terminated because of the sudden decision of the nursery to have all the rosebuds cut off, although the general infestation was light.

Soil treatment retards growth of roses.--Mr. Metzger says that "A careful check on the condition of the greenhouse roses that had received soil treatment for the control of Japanese beetle grubs was made on July 25. At this time it appeared that arsenate of lead in all dosages has retarded the growth of Lum's Double White, but no statement can be made as to the seriousness of this retardation. Souvenir also appeared to be retarded, but in a lesser degree. Briarcliff, Talisman, and Senior were apparently not affected by the treatment."

Vegetables stunted by soil treatment.--F. E. Baker, Moorestown, says that "The various vegetables planted in soil treated with 500, 1,000, and 1,500 pounds of acid lead arsenate per acre (for control of Japanese beetle larvae) were harvested and analyzed for arsenic as they matured. To date all plants in the poisoned plots seem to be stunted in growth. Lettuce, peas, radishes, and cabbage have been harvested and show a decrease in yield in all treated plots."

Control of Jap beetle on asparagus.--Mr. Metzger and A. R. Rolfs report that "Several instances of severe beetle injury to asparagus brush and the apparent ineffectiveness of regular asparagus beetle dusts to prevent it, were brought to our attention earlier in the month (July). Sprays consisting of 3 pounds of derris plus 3 pounds of flour to 100 gallons of water, and 20 pounds of lime plus 3 pounds of aluminum sulphate to 100 gallons of water were applied on two heavily infested blocks on July 21, 27, and 31. Both sprays were successful in driving the beetles from the plants, but did not remain effective after heavy rains. The derris sprays killed a considerable number of beetles."

Oils attract oriental and Asiatic garden beetles.--A number of essential oils, used in the Asiatic garden beetle study, were tested at Jericho, N.Y., as attractants for the oriental beetle. It was noted that dipentene had a slight attraction for the adults. During the month of July, in cooperation with the Japanese Beetle Control Division at Moorestown, 44 oils have been used in tests to determine their value as attractants for the Asiatic garden beetle. Some of these oils apparently have some attraction. A complete report will be prepared later in the season, but at this time tansey oil and petit-grain oil seem to have more attraction than any of the other materials tested. In all of the above-mentioned tests, standard Japanese beetle traps have been used and the oils have been prepared by Mr. Metzger.

FOREST INSECTS

Use of arsenic in nursery beds.--L. G. Baumhofer, of the Coeur d'Alene, Idaho, laboratory, reports that pine transplants at the forest nursery near

Halsey, Nebr., are being seriously injured by arsenic 4 years after treatment of the soil. In 1930, crude white arsenic at 80 pounds per acre was applied to a plot, by mixing and spreading with manure before plowing, as a test for control of white grubs. Serious losses from grubs occurred in both treated and untreated beds, but there was no noticeable arsenic injury to the 2-1 ponderosa pine transplants that season. Early in the spring of 1934 this plot, after being idle 3 years, was utilized for 1-1 jack and ponderosa pine transplants. By late in the spring the discoloration of foliage where arsenic had been applied was conspicuous, while adjacent beds remained normal. The 1-1 jack pine is particularly susceptible, and considerable mortality had occurred by midsummer. Recent tests indicate that the light, sandy loam soil in this section of the nursery is about neutral in acidity. Last year a small experiment with lead arsenate in dosages as low as 500 pounds per acre, showed that the age of the transplant stock, as well as the dosage, was an important factor in the extent of arsenic damage, the younger trees suffering most. New transplants in the lead arsenate plots are showing serious injury from arsenic the second season after treatment of the soil.

Mortality of mountain pine beetle in spruce.--W. D. Bedard, Coeur d'Alene, reports that six infested Engelmann spruce trees were examined for adults of the mountain pine beetle. Larvae of both the mountain pine beetle and the Engelmann-spruce beetle were abundant in all of these trees, but in no instance did the mountain pine beetle develop beyond the third larval instar, although the Engelmann-spruce beetle matured and emerged without any undue mortality.

Regional forest insect survey speeded by aid of C.C.C.--F. P. Keen, of the Portland, Oreg., laboratory, reports that the checking of sample plots in the ponderosa pine region of eastern Oregon to determine the trend of present bark beetle outbreaks was materially hastened during the past month by the help of the C.C.C. Two crews of C.C.C. men were placed in the field under the supervision of entomologists and covered 7,040 acres of the check plots in July. It is expected that the program, which normally takes 3 months' time, will be completed in 2 months.

Forest fires follow insect outbreaks.--According to Mr. Keen, it so often happens that large forest areas injured by insects are later swept by disastrous forest fires, that this aftermath of a forest-insect outbreak appears inevitable. Early outbreaks of the hemlock looper in thousands of acres of hemlock and spruce on the Oregon coast were followed by tremendous conflagrations. In 1929 a forest fire, sweeping through a large area of beetle-killed lodgepole on the Chelan National Forest, caught and burned to death two forest officers. This month (July) a 15,000-acre fire on the Colville National Forest, reported as the worst fire of the year, is burning through a stand of Douglas fir killed in 1930 by the Douglas fir tussock moth (Hemerocampa pseudotsuga McD.). The consequences of forest-insect outbreaks are far reaching.

New spray formula for elm leaf beetle.--C. E. Hood, of the Melrose Highlands, Mass., laboratory, reports that good control of the elm leaf beetle has resulted where trees were sprayed early with lead arsenate at the rate of 4 pounds to 100 gallons of water, with fish oil added as an adhesive at the rate of 4 fluid ounces to each pound of poison. Trees at Woburn, Mass., were sprayed with this mixture on May 28, soon after the beetles had begun to deposit eggs, and the foliage has since shown less injury than that on trees sprayed with the same mixture on June 22, as it controlled the adults from the start. The fish oil used is still protecting the foliage from the next-generation beetles that may feed upon it before going into hibernation.

Improvement cuttings in Southeastern States do not endanger stands.--A preliminary survey made recently by R. A. St. George, Washington, D.C., and B. J. Huckenpahler, Asheville, N.C., of some of the areas in the southeastern part of the United States where pine had been cut during the past year by C.C.C. personnel, including the stand-improvement work in national forests, as well as that done in making truck trails, fire breaks, telephone lines, etc., on State and private forest lands, indicates that the cutting of pine, even during the summer, does not seriously endanger the stands from insect attack.

PLANT DISEASE ERADICATION

Progress in blister rust control.--The season's accomplishments in blister rust control to the end of June showed that a total of 66,601,371 Ribes bushes were destroyed on 857,658 acres of land, with 334,287 man-days of labor, to protect forest areas producing valuable white pine growth. Control of blister rust on these areas has been established, as the few remaining Ribes bushes cannot supply enough pine-infecting spores to cause serious damage. Once established, control conditions are maintained by periodic examination of these areas and re-eradication work on any sections that are becoming restocked with Ribes. Excellent progress was made during June, the first full month of the Ribes-eradication season. More than twice as much work was performed as in May, as shown by the eradication of 45,376,677 Ribes plants on 597,841 acres, with 223,287 man-days of labor. Approximately 18,429 men were employed on this work during the month. Some of this personnel, most of whom are laborers, were employed with P.W.A. and cooperative State funds, and the remainder were assigned in connection with E.C.W. and F.E.R.A. blister rust activities.

Blister rust in New Jersey.--Blister rust has been found for the first time on 8 native pines in Sussex County, N.J. A total of 2,100 acres have been scouted, of which 400 contain white pines. These range from scattered pines growing in pastures to pure stands of pine about 30 years old, with a few large pines that have acted as seed trees. Some of the latter are 90 feet high and have long, straight trunks that would produce at least 1,000 board feet of lumber. A Ribes-eradication crew of five men has been procured from the C.C.C. camp located on the Stokes State Forest to apply the necessary control measures to protect the pine.

Status of phony peach eradication.--Two of the Bureau's inspectors on the phony peach disease project, accompanied by two employees of the Texas Department of Agriculture, completed inspection work on July 9, in both commercial and home orchards in the principal peach-growing sections of Bexar and Travis Counties, Tex. Prior to this, similar work had been done in Kerr, Limestone, McLennan, and Robertson Counties. In commercial orchards 69,545 phony trees were found, or 0.52 percent of the trees inspected, and in home orchards 12,609, or 1.07 percent of the trees inspected. There are several important peach nurseries in these areas, in addition to the commercial orchards. In Louisiana, the work was confined to two parishes in the northwest corner, Caddo and Bossier. In this State also, our inspectors were accompanied by State employees. A total of 396 phony trees was found in Louisiana, 200 in commercial orchards and 196 in home orchards. In Georgia, 612,321 trees were inspected up to July 31. Of this number, 7,864 showing phony disease were found in commercial orchards and 1,017 in home orchards, or a total of 8,881 found this season in that State alone. Of these diseased trees, 4,618 were found in Peach County, the center of the infested area.

P.W.A. assisting in barberry eradication.--The Public Works program for prevention of black stem rust is progressing satisfactorily, with a total of approximately 500 men at work in the 13 North Central States that received funds for this purpose. During July nearly 71,000 barberry bushes were destroyed. Barberry-eradication crews in the field this summer consist of from 6 to 10 laborers, supervised by a foreman who has had previous experience in plant-disease control work. The crews have been assigned to counties or localities known to be badly infested with barberry bushes, and to those that have suffered severe losses from stem rust in recent years.

Damage by stem rust slight in spring-wheat region.--With harvest well under way in the North Central States, it is evident that losses from black stem rust to small-grain crops is of little consequence, as compared with the damage to yield and quality resulting from the drought. Although stem-rust inoculum became general throughout the Dakotas and Minnesota in July the spread of the disease was greatly retarded by lack of moisture necessary for the germination of spores, and by the premature ripening of the grain. A preliminary estimate indicates that the damage from stem rust will not exceed 5 percent in any State in the spring-wheat area.

Dutch elm disease spreads rapidly to healthy elms if beetles escape from affected trees.--Comparison of two areas in New Jersey where work was done in 1933 shows that the number of trees attacked increases greatly if diseased trees are not destroyed before the bark beetles escape to other trees. Areas A and B were exactly similar in 1933 as to number of diseased trees found per square mile. On area A all diseased trees but one were removed and burned before the beetles escaped, but on area B only about half of the diseased trees were destroyed in time. This year there are already four times as many newly affected trees per square mile in B as in A and area B has already lost four times as many elms as area A, and it will cost four times as much this year to clean up area B of diseased trees, as it will to clean up area A. Diseased trees are usually attacked by beetles within a few days after general wilting or death of the foliage. The entering beetles lay eggs in the bark and in 50 or 60 days the grubs that hatch have reached full size, transformed into adult beetles, and gnawed their way out through the bark. The matured beetles feed on healthy elm twigs and thus apparently carry the disease to nearby trees. In order to prevent this spread, diseased trees must be removed before the beetles mature and escape. Thorough scouting to locate the diseased trees and prompt action in destroying such trees appear to be the only means of preventing spread.

COTTON INSECTS

Three species of cotton root lice in South Carolina.--C. F. Rainwater reported that three species of plant lice were attacking the roots of cotton in the vicinity of Florence, S.C. These specimens were identified by P. W. mason. The white root louse (*Trifidaphis phaseoli* (Pass.)) was the most abundant early in the season and was the most destructive of the three species in Florence County. It disappeared early and none were found after July 1. They seem to attack the roots deeper in the ground than the others. Although less abundant this season in Florence County, the corn root aphid (*Anuraphis maidi-radicis* Forbes) is thought to be usually the most abundant of the three species. The species that Doctor Mason states is "either a strain of a *Rhopalosiphum* or a new genus", Mr. Rainwater reports "are a sort of purplish color when first becoming adults, and later just before they die turn to an almost brown color." He had reared it through 13 generations by August 18. He says, "It is easily reared but does not produce alate forms as easily as either the white or green species. Alate forms of the white *T. phaseoli* and the green *A. maidi-radicis* can be obtained by putting a large number of nymphs in a vial and rearing them to adults, but only occasionally do I get an alate form of the purple or brown louse even though they may be crowded in the vial."

Thiodiphenylamine and sulphur dust not satisfactory for boll weevil control.--R. C. Gaines and M. T. Young, in reporting field-plat control tests against the boll weevil at Tallulah, La., during July, show that where a mixture of 1 pound of thiodiphenylamine and 9 pounds of sulphur was used in three applications, at the rate of 5 pounds per acre per application, there was no apparent reduction in the weevil infestation.

Derris powder fails to control boll weevil.--Mr. Young and G. L. Garrison made field-plat tests at Tallulah against the boll weevil with derris root mixtures containing 0.5 percent, 1 percent, and 2 percent rotenone, and results were compared with those obtained in plats treated with calcium arsenate and with others receiving no treatment. The square-infestation counts and bloom counts indicate that no boll weevil control was effected by seven applications of the dusts containing rotenone, when used in the field at the rate of 5 pounds per acre per application.

Hydrated lime not effective against boll weevil at Tallulah.--In field-plat tests, using mixtures of equal parts of hydrated lime and calcium arsenate and other mixtures consisting of one-third calcium arsenate and two-thirds hydrated lime, Messrs. Young and Garrison found boll weevil control was not equal to that obtained by the use of calcium arsenate alone. They also found that in the plats treated with hydrated lime alone the square-infestation records and bloom-count records indicate no weevil control.

Notes on cotton insects, injurious and harmless.--J. W. Folsom and K. H. Smith, Tallulah, studied the life histories and habits of many cotton insects during July. *Graphocephala versuta* Say which was suspected of causing "hopper damage", was caged in large numbers on normal cotton plants out of doors. They punctured the plants hundreds of times but caused no deformities of growth in the plants. *Stictocephala festina* Say fed freely on leaves, buds, and stems but without causing any apparent damage to the plants. *Lygaeus bicrucis* Say was taken by hundreds on cotton on June 13. A few were still alive on July 31. In the insectary they punctured small cotton plants, made split lesions in the stems, caused the stems to turn red, mated freely and laid eggs which hatched. In large outdoor cages these insects caused no noticeable damage or abnormal growth on large plants. The caterpillar Heliothis virescens Fab., well known as the tobacco bud worm, was found eating into and hollowing out cotton squares at Tallulah. It also eats leaves and stems of cotton. Autographa brassicae Riley, the cabbage looper, rags the cotton leaves in the same manner as does the leaf worm. The beetle Colaspis brunnea Fab. not only ate the edges of the bracts and ate holes in the bracts, but in the insectary also ate holes in many young cotton squares, which fell from the plants within 24 hours. Out of doors on large plants in cages they ate holes in many squares, causing them to fall, and also killed small cotton plants. The adults of the weevil Conotrachelus erinaceus Lec. eats into leaf buds and small cotton squares. Beetles of Pachybrachys sp. ate into squares, causing them to fall. Systena elongata Fab. gnaws leaves and buds and eats into small squares, causing them to drop.

PINK BOLLWORM

Trap-plot work gives good returns.--The work in the Big Bend of Texas has been continued throughout July, with some interesting developments. By July 12 it was evident that some of the trap plots would be of no further use; therefore, 8 of the 25 plots in the Presidio section and the stub plot were discontinued. Additional plots showing very light infestation or those where the surrounding field infestation was approximately the same were discontinued from time to time, and by the end of the month only 6 were being used. One of the discontinued plots was located below Presidio at a point where infestation was extremely heavy last fall. Through July 26 over 8,000 blooms from this plot and nearly 2,000 from the adjacent field cotton had been inspected without finding any worms. The most heavily infested plot is located in a field about 2 miles above Presidio. To date 4,098 worms had been found in the 25 plots, and of this number 2,034 came from the heavily infested plot. Of the 145 worms found in adjacent fields, 75 of them came from the field in which this plot was located. The inspectors have been trying, without success, to find some reason for the heavy infestation in this plot. The owner of this field is perhaps the largest farmer in Presidio County and has been very much interested in the trap-plot work. He is ready and willing to carry out any recommendations or suggestions we may offer. At Castolon, in Brewster County, the two half-acre plots have also been continued throughout the month, and the inspectors continue to find a rather large number of worms. The number varies, but for the month of July averaged approximately 70 worms per day. Throughout the month approximately 75,000 blooms from the adjacent field cotton were inspected without finding any worms. General inspection of the fields has also been made from time to time. The owners of the field in which the two plots are located are highly pleased with the results of the work. They stated that even if they do not pick any cotton from the half-acre plots they will have received good returns from the land and labor involved in producing the trap cotton. These two plots, together with six in the Presidio section, are being dontinued.

Recess in wild-cotton eradication.--The wild-cotton eradication program in Florida has been discontinued for this season. All of the area along the west coast from Naples northward has been recleaned for the second time this season. In addition, a number of new colonies, which were quite small, were located and removed. These were missed during the previous recleaning because quite a bit of the land was covered with water, so that the area could not be scouted, and in other places the land had been burned over. It will be recalled that this second recleaning was done to prevent any of the seedling plants producing fruit before the eradication program can be resumed next winter. During the month some 46 acres were covered, from which 330 mature plants, 9,460 seedlings, and 114 sprouts were removed. During the recleaning a considerable number of bolls were examined from time to time without finding any bollworms.

Inspection of blooms and bolls.--The daily collection and examination of blooms from the cotton at Chapman field was continued throughout the month, a total of 961 blooms being examined. From these, 14 pink bollworm larvae were taken. In collecting the blooms it is almost impossible to avoid missing a few, and during the month 34 that had been missed and developed into bolls were examined and 2 specimens of the pink bollworm were found. Laboratory inspection was completed at a number of the field stations during the month, but inspections are still being made at the San Antonio laboratory. Only 3 pink bollworms were found and these all came from material collected in the regulated area of western Texas. Approximately 1,000 green bolls, collected from the new crop in the Salt River Valley, were inspected, with negative results. This area was released last December.

TRUCK CROP AND GARDEN INSECTS

Curly-top damage in western Colorado and eastern Utah.--W. A. Shands, of the Grand Junction, Colo., laboratory, reports that in the western Colorado sugar beet fields, an abnormally large percentage of the beet leafhopper is carrying curly-top virus of a very virulent form. In the Grand Valley, Colo., district, an average of 21.8 percent of the beets were infected with curly-top during the latter part of June, as compared to 16.8 percent during the corresponding period last year.

Curly-top disease of beets continues serious in Utah.--E. W. Davis, Salt Lake City, says that the sugar beets throughout the state of Utah are rather spotted in regard to the extent of curly-top disease. Cache Valley has a very good prospect for a beet crop. Box Elder and Salt Lake Counties will be very seriously affected by curly-top and hopes for a beet harvest have been abandoned. In Utah County most of the beets planted were of the resistant variety. In Sevier Valley practically all of the beets are heavily diseased, except those immediately adjoining the mountains on the west side of the valley. For a month many beet fields in the larger section have been showing 100 percent curly-top infection.

Curly-top in southern Idaho and Montana.--J. C. Chamberlin, H. G. Bergen, and D. E. Fox, Twin Falls, Idaho, report: "Beets throughout central Idaho were in most fields severely stunted and yellowed from heavy infestation of the beet leafhopper and the high percentage of curly-top. By July 10 to 13 infestation was as extensive as in 1931 (the bad year) by the first of August. The present status of beet acreages in the south-central Idaho beetgrowing areas is summarized in the following table.

Area	Acreage Planted	Thinned	Abandoned	Growing
Jerome-Eden-Hazelton	2,180	1,506	674	550
Twin Falls (south side)....	6,714	3,691	3,023	280
Burley	5,362	4,414	1,084	a/ 4,414
Paul-Rupert..............	6,406	3,971	2,595	a/ 3,971
Oakley	960	577	404	a/ 577

a/ Acres thinned. Additional abandonment is anticipated before or at harvest.

Conditions in eastern Idaho in general are favorable for a good crop. Many of the fields around Pocatello, Osgood, and Blackfoot are injured and some quite severely, but these localities should still produce fair yields. The Sugar City - St. Anthony district is suffering to some extent from drought, but the beets are still doing fairly well. Notwithstanding anticipated damage in local and outlying areas, crop prospects for eastern Idaho as a whole are still excellent. In Montana the heaviest curly-top damage is centered around Billings, within a radius of from 15 to 17 miles. The small area injured indicates that this has resulted from a local infestation in the immediate vicinity of Billings. Injury throughout Montana as a whole is very small and, with the exception of a comparatively small acreage, good yields are anticipated.

High temperatures and mechanical methods save pea crop in Washington and Idaho.--J. E. Dudley, Madison, Wis., was detailed to assist in the control of the pea aphid on seed peas in eastern Washington and western Idaho. He observed that the aphids, when knocked from the pea vines at a time of day when the temperatures were highest, were unable to return to the plant, but succumbed in a very short time. The sparseness of the pea growth permitted the sun's rays to reach the surface of the soil. Drags 40 feet long and 4 poles wide were constructed of bamboo poles, and in 2 days 1,200 acres of peas were gone over with them. In some fields the control obtained ranged from 50 to 90 percent. Where the percentages of kill were lower, the vines covered the ground so that the sun's rays could not reach the aphids that were knocked from the plants. Fifteen thousand acres of seed for cannery peas are involved, and the prompt inauguration of control measures will probably reduce the injury considerably.

Pea weevil larvae found in canned peas in New York State.--J. R. Douglass, of the Estancia, N.Mex., laboratory, reports that 37 percent of the 27 cans of peas collected by B. J. Landis, Columbus, Ohio, in western and southwestern New York, contained pea weevil larvae. A total of 200 peas per can were examined. In the infested cans the peas containing weevil larvae ranged from 1.0 to 7.5 percent with an average of 0.8 percent infested peas for all cans examined. An additional number of peas revealed entrance holes of the newly hatched pea weevil larvae that had been killed during the canning process before they had begun to feed. No infestations were found in canned peas collected in Pennsylvania, Indiana, or Tennessee.

Winter destruction of nightshade successful in controlling pepper weevil.--J. C. Elmore, of the Alhambra, Calif., laboratory, reports that recent field surveys have demonstrated that infestations of the pepper weevil in the area where all nightshade that could be found was destroyed during the winter of 1933-34, is in striking contrast to infestation in adjacent areas where the nightshade clean-up was not practiced.

Dusts more effective than sprays in controlling Mexican bean beetle in Virginia.--According to a report submitted by L. W. Brannon, of the Norfolk, Va., laboratory, preliminary results from experiments in field control of the Mexican bean beetle at Onley, Va., show that in general the insecticidal dusts were more effective and gave greater increases in yield of snap beans than did the sprays. The best results were obtained with derris-dust mixtures containing 0.75 percent rotenone, with tobacco dust or talc or ground marc, as diluents. The results indicate that talc is probably the best diluent for derris root powder and also gives excellent foliage protection, as well as yield increases.

Derris powder gives promise as Mexican bean beetle insecticide in Ohio.--Reporting on results of recent insecticidal tests against the Mexican bean beetle, N. F. Howard and H. C. Mason, Columbus, Ohio, state: "(1) Of the sprays tested, derris powder in water gave as good if not better control than any. Synthetic and natural cryolite gave slightly better control than did magnesium arsenate. Magnesium arsenate with flotation sulphur paste, barium fluosilicate, potassium hexafluoaluminate, and derris extract gave good control, equalling that obtained with the cryolites. Copper cyanide and pyrethrum extract did not give satisfactory control. Pyrethrum powder gave little or no control. Magnesium arsenate (2 to 50) injured bean foliage slightly. (2) Of the dusts, derris with various combinations of carriers mixed gave very good control, the best control of any in the series. Derris-tobacco dust and derris-infusorial earth gave practically as good control as derris with the carrier mixed; but derris-talc, derris-marc, and derris-lime did not give satisfactory control. The 10 to 90 dusts mixed from derris of a rotenone content of 3.9 percent gave about as good control as the 15 to 85 and 20 to 80 mixtures. The commercial brands, with one exception, gave about the same control as the home mixed. Barium fluosilicate, both undiluted and with flour, gave good control. Pyrethrum and tobacco dust mixed gave very unsatisfactory control. Synthetic cryolite with all carriers gave very little or no control. The control obtained from the derris dusts was as good or better than that from derris powder used as a spray. (3) Results: The results of these experiments give a fair indication of the effectiveness of these materials against the Mexican bean beetle in Ohio. Although the infestation was not as heavy as sometimes occurs at South Point, Ohio, the foliage of some of the checks sustained injury as high as 70 to 75 percent. Considering the fact that the beans received only one treatment and that this was not applied at the proper time for best control, derris powder used either as a dust or as a spray looks very promising as an insecticide for the control of the Mexican bean beetle."

Derris gives satisfactory control of cabbage worms in Ohio.--N. F. Howard and R. H. Davidson, Columbus, report the following results of insecticidal tests against cabbage worms on cabbage in Ohio: "(1) Derris-dust mixtures containing 0.4 percent rotenone gave satisfactory control when diluted with talc, hydrated lime, ground marc, infusorial earth, or tobacco dust. (2) Derris root powder used as a spray (5 pounds of the powder containing 4 percent rotenone to 100 gallons of water) did not give as satisfactory control as when used as a dust. (3) Pyrethrum powder used as a dust in combination with various diluents, such as cryolite-tobacco dust and cryolite-sulphur-tobacco dust, gave fair control of the cabbage worms. (4) Several brands of calcium arsenate, applied undiluted in the form of a dust, gave unsatisfactory control."

Insecticides control raspberry fruit worm.--S. E. Crumb, of the Puyallup, Wash., laboratory, reports as follows: "The most consistent and promising control was obtained by one application of spray containing acid lead arsenate (4 to 100), basic lead arsenate (1 to 300), or barium fluosilicate (4 to 100), followed by two applications of spray containing ground derris root having a rotenone content of 0.01 percent; or by two applications of any of the first three sprays mentioned, followed by one application of the derris spray. Fair control was obtained with derris root sprays containing 0.01 percent rotenone with or without nicotine sulphate (1 to 400), using a neutral caseinate spreader. The sprays containing anabasine sulphate 40 (neonicotine) or pyrethrum extracts, in general did not give satisfactory control. This first spray (in the two-spray and three-spray treatments), applied soon after the beetles of Byturus unicolor Say begin to emerge from hibernation, appears to be of doubtful value, at least in the Puyallup district."

Use of arsenicals on shade-grown tobacco in Georgia-Florida district decreased.--F. S. Chamberlin, of the Quincy, Fla., laboratory, reports: "Until recently the shade-grown tobacco industry in Georgia and Florida has used large quantities of paris green on the crop, mainly for the control of the tobacco flea beetle and the tomato worm. The poison was applied undiluted at the rate of approximately 1 pound per acre, with an average of about 12 applications for the season. During 1930, 22 samples of cured wrapper tobacco were found to contain an average of 2.55 grains of arsenic trioxide per pound. During the growing season of 1934, most of the fields of shade-grown tobacco received only two or three applications of undiluted paris green, made during the first 3 weeks of the growing period. Ordinarily these applications would not leave a harmful residue on the marketable portion of the crop.

Tobacco flea beetle controlled by derris or cube dusts.--Mr. Chamberlin also reports that derris or cube dust mixtures containing 1 percent rotenone gave good control of the flea beetle in lightly infested tobacco plant beds. Finely ground tobacco dust proved slightly preferable to kaolin as a diluent in these tests. Preliminary tests under field conditions have indicated that derris or cube dust mixtures, with 0.75 percent rotenone content, are effective against the flea beetle.

To prevent harmful residues on lettuce.--According to results obtained in preliminary tests conducted by K. B. McKinney, of the Tempe, Ariz., laboratory, spring lettuce plants that were dusted or sprayed from 35 to 40 days prior to harvest (before the heads began to form) did not contain any leaves that were included in the market product.

Hot-water treatments effective against grape mealybug on glads.--R. H. Nelson, of the Greenhouse Insects Laboratory, Washington, D.C., reports on hot-water treatments against the grape mealybug. A series of unhusked infested corms were treated in hot water at temperatures from 110° to 120° F., for varying lengths of time. The following treatments were found to be effective against all stages, including the eggs: 116° for an immersion of 1 hour, and 120° for 30 minutes. Naphthalene flakes have also been tried against this insect, using them as recommended for control of the gladiolus thrips (1 ounce per 100 corms), leaving the flakes in for 2, 3, and 4 weeks. In none of these tests was the treatment entirely effective. However, the mortality was high and the treatment holds some promise.

Hot-water treatments effective against bulb mite in tuberoses.--Tests conducted by R. H. Nelson and C. A. Weigel, of the Greenhouse Insects Laboratory, in the control of the bulb mite with hot-water and vapor-heat treatments, indicated that immersion in hot water for 60 minutes at a temperature of 110° F. is completely effective. No hatching was observed following the treatment. With the vapor-heat treatment, however, hatching occurred after a 1-hour treatment at 110° and 112°. At 110° a kill of only 66 percent of the mites was obtained. Hatching of treated eggs occurred after immersion for 30 minutes at 118°.

Hot-water treatments for control of bulb nematode.--Experiments by Randall Latta, of the Sumner, Wash., laboratory, and W. P. Courtney, of the Bureau of Plant Industry, on the control of the bulb nematode (*Anguillulina dipsaci* Kuhn.) gave the following results: Dilutions of formalin in the standard hot-water treatment at 110° F. showed that at that temperature formalin should be quite toxic to free-swimming nemas in a treatment tank. At dilutions of 1 to 200, all forms of active, revived, and dried quiescent nemas were killed in less than 40 minutes. At 1 to 400, active nemas survived treatments of 100 minutes but not of 120 minutes. Dried quiescent nemas were all killed in a treatment of 100 minutes, but 1 out of 310 revived following treatment for 120 minutes. A test was made to determine whether digging nema-infested stock before normal digging time would give satisfactory results. Bulbs were dug on June 8, and a sample from these treated for 1, 2, 3, and 4 hours at 110° F. at weekly intervals, starting June 11. Three weekly tests have been completed and the bulbs that remained in the ground until 3 days before treatment showed 100 percent kill after 1-hour treatment or longer, not including the heating period of the bulb. The bulbs taken from storage, however, showed increasing revival of nemas as the duration of the curing period increased.

INSECTS AFFECTING MAN AND ANIMALS

Heavy screw worm infestations in Georgia.--R. A. Roberts, of the Uvalde, Tex., laboratory, is temporarily stationed at Savannah, Ga., where he is assisting W. E. Dove in collaborating with the State entomologist in handling problems connected with the screw worm outbreak in that region. Infestations of livestock are heavy in the coastal counties from Camden north through Brantley, McIntosh, Long, and Liberty Counties with between 1,000 and 2,000 cases in Brantley County, and urgent requests for assistance have been received from State authorities. Arrangements are being made whereby the State will receive assistance from the F.E.R.A. in the control program.

A flytrap for stable flies.--W. G. Bruce, of the Ames, Iowa, laboratory, has continued his tests of various adaptations of traps designed to catch the stable fly. Large numbers of flies have been trapped, but there has seemed to be no appreciable reduction of the number attacking horses and cattle, probably because of the intermittent feeding habits and continued emergence of the flies. The trap is designed to catch the flies while the host animal walks through it.

Trapping flies in armadillo burrow.--A. W. Lindquist, Uvalde, Tex., reports some interesting results from the exposure of meat in armadillo burrows. From liver baits so exposed Sarcophaga was reared. From rabbit meat a good number of Synthesiomyia nudiseta V. d W. were recovered. The parasite Brachymeria fonscolombei Duf. has been recovered from two underground bait jars. More flies have been bred from the underground exposures than from those aboveground.

Derris controls goat lice.--O. G. Babcock, of the Sonora, Tex., laboratory, reports a complete kill of goat lice on a limited number of animals by dipping them in a pine-oil extract of derris. An acetone extract of derris was also effective. At the time the report was made sufficient time had not elapsed to determine the effect upon goat-louse eggs.

FOREIGN PLANT QUARANTINES

Recent entomological interceptions of interest.--A living adult of Cylas turcipennis Boh. was intercepted on June 10 at Boston in a sweetpotato in stores from India. This represents our first interception record of this weevil arriving from India. A larva and adult of Acythopeus gilvonotatus Barber were intercepted at San Francisco in an orchid (Phalaenopsis stuartiana) in cargo from the Philippines. The specimens were alive and were boring in the root and crown of the plant. Living larvae of Brachycerus albidentatus Gyll. were intercepted in June at New York in squill (Scilla sp.) bulbs in cargo from Italy. Although this insect has been taken in garlic from Italy and Spain and in cipollino from Morocco, this represents our first record of its arriving in squill. A living adult of Monocrepidius bifoveatus Palis. was intercepted at New Orleans on a pineapple in cargo from Cuba. A specimen

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of *Neoconocephalus affinis* Beauv. was taken at Baltimore on banana debris in cargo from Cuba. This species is not recorded from continental United States. The earwig *Proreus simulans* Stal was intercepted October last at Honolulu, Hawaii, on a pineapple plant in the mail from the Philippines. A specimen of *Draeculacephala lenticula* Ball was taken at Philadelphia with banana debris in cargo from Honduras. Four living larvae of *Conotrachelus aguacatae* Barber were intercepted at El Paso in an avocado seed in baggage from Mexico. A living adult of *Aeolus pulchellus* Cand. was intercepted at Hidalgo, Tex., in a sorghum stem in baggage from Mexico. A living larva of *Gnorimoschema operculella* Zell. was intercepted at New York last April in a tomato in stores from Belgium. This insect was taken in tomato at San Pedro, Calif., in 1930. Living specimens of *Bactrocera cucurbitae* Coq. were intercepted last May at San Pedro, Calif., in tomatoes in stores from Hawaii. Of 100 pounds of tomatoes examined, 15 pounds were found to be infested.

Recent pathological interceptions of interest.--A mango from Cuba was intercepted at New York on July 8 and found to be disfigured by *Leptothyrium pomi*, our first interception of this fungus on mango. Oat straw from Mexico intercepted at Eagle Pass on June 22 was infected with *Puccinia coronata*, our first interception of crown rust from Mexico. Our first interception of *Sclerotium cepivorum* from the Azores was made at Boston in garlic on June 27. Our first interception of *Peronospora schleideni* was made at Baltimore on July 16 on leek leaves from Japan. *Botrytis* sp., *Pleospora* sp., and *Heterosporium* sp. were found in the same material. Our first interception of *Phytophthora phaseoli* was made at El Paso in string beans from Mexico on July 13. New York inspectors found brown rot (*Monilia* sp.) on July 14 affecting cherries from Sweden. The only previous interceptions of brown rot on cherries were from England and Portugal, both in 1933. Pussy willow cuttings from Germany were intercepted at Philadelphia on March 17 and were found to be infected with *Discella carbonacea*. A disease of *Dracaena* sp. intercepted at Philadelphia last April 18 in plants from Japan has been determined as due to *Gloeosporium polymorphum*. A shipment of *Aglaonema* cuttings, brought in as baggage, was inspected at Seattle June 4. Among other fungi and diseases was an undetermined species of *Physalospora* of which no species had been previously reported on this host, and a species of *Gloeosporium* that does not agree with any species reported on this or related hosts. *Gloeosporium* sp. was found on *Daphne* leaves from Japan at Seattle on April 12. No *Gloeosporium* has previously been reported on *Daphne*. Rhododendrons from England were inspected at Seattle on April 24 and were found infected with *Ascochyta* sp. (spores too narrow to be *A. rhododendri*), *Gloeosporium rhododendri*, and *Phyllosticta saccardoi*. A disease intercepted on *Camellia japonica* from Japan at Seattle April 12 was determined as *Phoma* (?) *camelliae* Pass., not reported from Japan; no specimen in the herbarium for comparison. A diseased tomato from Mexico intercepted at Mobile on April 21 was infected with *Helminthosporium* sp. differing from species previously reported on tomato.

Insect parasites baffle inspector.--A recent insect interception at San Ysidro, Calif., provided a neat little surprise for the inspector there. A brown larva of some lepidopterous insect unknown to him was found in a cactus plant coming from Mexico. Intending to send it in for identification, he stored it carefully in a vial, but was astounded to find at mailing time that the larva had disappeared and in its stead were now several small maggots, no doubt parasites that had developed in and destroyed the original find. It is now impossible to determine the intercepted insect unless the identity of the parasites will furnish some clue to the vanished host.

Even cacti carry insects and diseases.--Shipments of plants from foreign countries are, as a rule, inspected very carefully at time of entry to determine whether they carry insects and diseases. A shipment consisting of 6 cases containing 1,004 plants of numerous species and varieties of cacti, which many people would consider quite unattractice to pests of any kind, arrived from Mexico on July 9 and was examined in San Francisco. The inspection disclosed 59 insect infestations, involving at least 24 different species occurring on 34 species of cacti in the shipment, and in addition 1 infection of a plant disease. Although practically all the pests found are known to occur in this country, this instance is an excellent illustration of the number and variety of pests that may be found even in such apparently clean plants as cacti.

Confirming the need for careful border inspection.--Recently a truck came through Presidio, Tex., carrying a family from Gerrero, Mex., en route to Ojinaga, Mex., and a few days later the same truck made the return journey. On inspection several locks of cotton were found in it, said to be from Zapata, Tex., but these showed no evidence of infestation. However, on opening a bag on the truck in which a saddle was packed, some 20 locks of cotton were found in the bottom, every one infested with pink bollworm. The driver stated that the bag had been bought to pack the saddle at Ojinaga. The inspector's identification of the insect as the pink bollworm was, as usual, confirmed by specimens submitted to Washington.

DOMESTIC PLANT QUARANTINES

Transit inspection.--Owing to the increasing amount of material, restricted by Federal plant quarantines, that is being carried by air express, information as to the routing of planes in the region of Philadelphia, New York, and Boston is being obtained to determine whether the movement is from the regulated areas to points outside. At the Chicago Municipal Airport, mail and express shipments arriving from eastern States are again being observed. But for the alertness of employees of the Philadelphia Ninth Street Post Office, a recent air-mail shipment of cut flowers of gladiolus might have proceeded from Philadelphia to Portland, Oreg., without Japanese beetle certification. After they had refused to accept the uncertified flowers for mailing, the package was later found and the transit inspector notified. The inspector arranged to have the flowers examined and certified and the package was then allowed to proceed. A recent tabulation of the number of shipments requiring inspection at each transit inspection point for each quarantine violation discovered, shows that inspectors at points near or within a quarantined area are, in general, more likely to find violations as a result of a much smaller number of inspections than those farther away. More shipments have been inspected at St. Paul for each violation than at any other point. The inspector there has had to examine 2,396 shipments for each violation found. At Boston, on the other hand, a violation may be expected in one out of 199 shipments, judging from the average since inspection was instituted in 1931. Averages for the other principal inspection points, as computed from figures in the annual reports, are listed below in ranking order: Washington, D.C., 331; New York, 417; Jacksonville, 619; Chicago, 802; Seattle, 802; Omaha and Council Bluffs, 835; Albany, 960; Philadelphia, 1,042; Pittsburgh, 1,203; Portland, Oreg., 1,208; Kansas City, Mo., 2,081; and Spokane, 2,136.

The inspection of cars arriving at Chicago from the Japanese beetle area has been continued in July and August, and living beetles have been found in several cars containing produce, or cars that have been emptied. Such cars have been cleaned or fumigated. The practice of taking specimens of plants involved in violations of the Japanese beetle quarantine has been discontinued wherever someone is available and willing to witness the interception and who is sufficiently impressed with the violation to recall it if necessary. This quarantine covers a wide range of plant material and the specimen is seldom called for in settling a controversy with the shipper. In the gypsy moth quarantine, however, the sampling practice is continued, as only woody plants are restricted, and this is also necessary in quarantines applying to pines, currants, gooseberries, mahonias, barberries, narcissus bulbs, poplar, and willow. Instructions on the subject are contained in circular 47-T to transit inspectors.

Phony peach disease.--Arrangements are being made by G. W. R. Davidson, Atlanta, Ga., to assist the Missouri State inspectors in the inspection of the vicinities of the principal peach nurseries in the State. The Canadian phony peach quarantine was revised on May 9, according to a recent announcement in a railway circular. Shipments of the host plants from any part of the United States require certification as originating in a disease-free nursery, with disease-free environs within 1 mile of the nursery; also each tree or root must have been examined and found free from the peach borer. Further, fresh peaches and peach nursery stock or pits are prohibited importation, as heretofore, into British Columbia from all States east of and including Wisconsin, Illinois, Missouri, Arkansas, and Texas.

White-pine blister rust.--Vehicular inspectors of the Japanese beetle force, stationed at roadside points, have reported the interception during June and July of 26 auto tourists carrying white pines from such generally infested States as New York, Pennsylvania, and the New England States, principally to points in Indiana, Ohio, and Michigan. Some 140 pines were being carried in this manner, one tourist having as many as 40. All the 140 were surrendered at the inspection stations and were destroyed by burning.

CONTROL INVESTIGATIONS

With the installation of the six steel gastight outer doors on the El Paso fumigation plant, the original 19 projects for physical improvements on the Mexican border for the Division of Foreign Plant Quarantines will be completed. This last project was 95 percent completed on July 31. Another project, for the construction of a system for ventilating the fumigation house at Laredo and disposing of the hydrocyanic acid after fumigation, is under way, using funds recently reallocated by the Public Works Administration. The gas will be exhausted from the fumigating chambers by means of four blowers. Each blower has a capacity of 6,000 cubic feet of air per minute and is connected with a steel stack 110 feet high. The system should clear the fumigation chambers of hydrocyanic acid so that it will be safe to enter in 20 minutes.

Bids for the construction of two mushroom houses, a greenhouse laboratory with four greenhouses, and a main laboratory building at Beltsville, Md., were opened on July 27 and it is expected that the contract will soon be let, as the bids were satisfactory.

A series of pictures to show the effect of feeding of the Japanese beetle on fruit trees in the heavily infested area of southern New Jersey, was taken from an autogiro. The photographs plainly show the foliage injury resulting from the feeding. A colored motion picture, which brings out markedly the difference in color of the injured and uninjured foliage, was also taken.

Gelatin films aid in study of effect of light on derris powder.--M. C. Swingle and F. L. Campbell, Takoma Park, Md., report that preliminary experiments indicate that the detoxication by light of derris powder in thin deposits can be studied quantitatively by exposing to light gelatin films in which derris powder is embedded and by feeding to imported cabbage worms exposed and unexposed films in cabbagge-leaf sandwiches. Derris powder in gelatin films acts as a stomach poison against the imported cabbage worm, which is killed when it feeds on the unexposed film and is not affected by crawling over the film.

Insecticidal value of Cracca virginiana.--Mr. Campbell and W. N. Sullivan, Takoma Park, state that tests against house flies of acetone extracts of 127 samples of Cracca virginiana roots from 13 States indicate that the most effective samples are likely to be found in southern Georgia and in Florida and Texas. In every instance effective extracts gave an unmistakable blue color when submitted to the Durham test, whereas ineffective extracts gave little or no blue color.

BEE CULTURE

Calcium arsenate dust is fatal to bees.--George H. Vansell, of the Davis, Calif., laboratory, reports that, within 4 hours after airplane dusting of tomatoes in that vicinity, adult bees were dying at an alarming rate. The dust, calcium arsenate, was applied to the tomato plants, which were not visited by the bees to any extent. The adjoining fields, however, were full of blossoming morning-glory and mustard plants from which the bees were gathering nectar. Within a few days the colonies were practically devoid of unsealed brood. The loss of adult bees was exceedingly heavy--so heavy, in fact, as to cause starvation of much of the brood that escaped poisoning. An analysis of the dead bees showed an arsenic content of 55 parts per million, and pollen taken from the hive showed 50 parts per million. Investigation by officials of the University of California disclosed that the airplane dusting was done without permit; the insects in the tomato fields would not warrant dusting at the time; and the coverage on the tomatoes was so poor that dusting would have been ineffective, irrespective of the condition of the insects.

IDENTIFICATION AND CLASSIFICATION OF INSECTS

Florida pepper weevil changes name.--During the early part of 1934, J. R. Watson and F. S. Chamberlin submitted for identification specimens of a cryptorhynchid weevil found injuring pepper plants in Dade County, Fla. The species was at first considered by L. L. Buchanan, who examined them, to be undescribed, though very closely related to a Brazilian species, bred from tobacco stems, which was described by Marshall in 1925 as Collabismodes tabaci. More recently,

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information received by Mr. Watson from S. C. Bruner, Havana, Cuba, has brought out the fact that the Florida specimens are identical with a Cuban species described by Boheman many years ago as *Cryptorhynchus cubae*. The species should be removed from the genus *Cryptorhynchus* to *Collabismodes*, therefore the name of the Florida pepper weevil becomes *Collabismodes cubae* (Boh.).

Works on tabanids.--James M. Brennan worked from July 20 to August 10 at the National Museum on Tabanidae of the subfamily Pangoniinae, in connection with his revision of the nearctic species of this subfamily.

Cicadula maidis found on corn in California.--Specimens identified by P. W. Oman as *Cicadula maidis* DeLong and Wolcott were sent in for determination from Temple, Los Angeles County, Calif., July 25, 1934, by R. E. Campbell. Mr. Campbell reports that "adults were very numerous on mature corn, on which there was considerable honeydew and sooty mold fungus. Young corn near by, 6 to 12 inches high, was infested with from 4 to 20 adults each, the leaves showing injury and the plants appearing stunted." This appears to be the first record from continental North America of this species reported as a pest of corn and a possible transmitter of mosaic disease in Puerto Rico and Cuba. In addition to the West Indian specimens, the National Museum collection contains a single specimen from Vicosa, Minas Geraes, Brazil.

Beet leafhopper identification.--Sometime ago, in checking over the species of leafhoppers described by Haupt in "Homoptera Palestinae 1" (Bull. 8, Zionist Organ. Inst. Agr. and Nat. Hist. 1927), P. W. Oman noticed that the excellent figures of the male plates and internal male genitalia of *Thamnotettix indivisus* Hpt. represented very well these structures in the common North American beet leafhopper (*Eutettix tenellus* Bak.). Consequently, specimens of *E. tenellus* were sent to Haupt for comparison with *T. indivisus* and he has recently reported that they are the same. Because of the possibility that Haupt's specimens may have been erroneously labeled as to locality, it seems inadvisable to publish this fact without confirmation through the collection of additional specimens in Palestine. If this distribution proves to be correct, it will undoubtedly be of considerable importance in future investigations of the beet leafhopper.

Specimens of *Geisha distinctissima* Walk. have been identified by P. W. Oman, from Seattle, Wash. (Nos. 3964 and 3969), reported as intercepted alive in quarters on *Aralia* and *Euonymus* from Japan. Specimens on *Euonymus* were last-instar nymphs; those on *Aralia* were adults. *G. distinctissima* is a fulgorid resembling the North American *Ormenis venusta* Melichar. Matsumura has reported (Ent. Nachr. 26, p. 213, 1900) that this species often causes much damage to mulberry, *Prunus*, tea, and *Diospyros kaki* (persimmon) in Japan.

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